

CLAIMS:

1. (Twice amended) A Peptide containing less than 50 amino acids, comprising at least one dimer of the type XG, wherein X stands for a N^G-mono- or N^G-N^G-dimethylated arginine, asymmetrical dimethyl arginine, or N^G-N^G-dimethylated arginine, symmetrical dimethyl arginine, that is ~~able to react with~~ specifically recognized by antibodies present in sera from patients with systemic lupus erythematosus (SLE), and wherein said antibodies are specifically associated with SLE; and with said methylation being crucial for the ~~reaction between said peptide and recognition of the peptide by said antibodies and wherein said antibodies are present in sera from patients with:~~ systemic lupus erythematosus, or infectious, recurrent or chronic mononucleosis or infection, or certain cancers which are related to infection with Epstein-Barr.
2. (Amended) The peptide according to claim 1 comprising the amino acid sequence of SEQ ID NO 1, SEQ ID NO 2, SEQ ID NO 3, SEQ ID NO 4, SEQ ID NO 5, SEQ ID NO 6, SEQ ID NO 7, SEQ ID NO 8, SEQ ID NO 9, SEQ ID NO 10, SEQ ID NO 11, SEQ ID NO 12, SEQ ID NO 13, SEQ ID NO 14, SEQ ID NO 15 or, an analog of any of SEQ ID NO 1-15, wherein the analog has an amino acid sequence identical to the respective SEQ ID NO except that the analog comprises conservative amino acid substitutions, ~~as defined by Table 4,~~ where the conservative amino acid substitutions are selected from the following: Thr, Gly, or Asn substituted for Ser; His, Lys, Glu, or Gln substituted for Arg; Ile, Met, Phe, Val, or Tyr substituted for Leu; Ala, Thr, or Gly substituted for Pro; Pro, Ser, Ala, Gly, His, or Gln substituted for Thr; Pro, Gly, or Thr substituted for Ala; Met, Ile, Tyr, Phe, or Leu substituted for Val; Ala, Thr, Pro, or Ser substituted for Gly; Met, Leu, Phe, Val, or Tyr substituted for Ile; Met, Tyr, Ile, Leu, Trp, or Val substituted for Phe; Phe, Trp, Met, Ile, Val, or Leu substituted for Tyr; Ser, Thr, or Met substituted for Cys; Gln, Arg, Lys, Glu, or Thr substituted for His; Glu, His, Lys, Asn, Thr, or Arg substituted for Gln; Asp, Ser, or Gln substituted for Asn; Arg, Glu, Gln, or His substituted for Lys; Asn, Glu, or Gln substituted for Asp; Gln, Asp, Lys, Asn, His or Arg substituted for Glu; and Ile, Leu, Phe, or Val substituted for Met.
3. (Amended) The peptide of claim 1 fused to a linker molecule.

5. (Amended) A peptide comprising tandem repeats of at least two of any of the peptides of claim 1.

19. (Twice Amended) A diagnostic kit for use in detecting antibodies which specifically bind SmD antigens ~~auto-immune diseases selected from the group consisting of:~~

~~systemic lupus erythematosus, discoid lupus erythematosus, scleroderma, dermatomyositis, rheumatoid arthritis, Sjögren's syndrome,~~

said kit comprising at least one peptide according to claim 1, with said peptide optionally bound to a solid support.

20. (Twice Amended) A diagnostic kit according to claim 19, said kit comprising at least one peptide according to claim 1, optionally in combination with native methylated SmD1 or SmD3 and recombinant unmethylated SmD1 or SmD3, wherein said peptides are attached to a solid substrate.

21. (Amended) A diagnostic kit according to claim 19 wherein said solid support is a membrane strip.

23. The peptide according to claim 1 wherein X stands for N^G-mono- or N^G-N^G-dimethylated arginine.

24. The peptide according to claim 1 comprising the amino acid sequence of SEQ ID NO 1, SEQ ID NO 2, SEQ ID NO 3, SEQ ID NO 4, SEQ ID NO 5, SEQ ID NO 6, SEQ ID NO 7, SEQ ID NO 8, SEQ ID NO 9, SEQ ID NO 10, SEQ ID NO 11, SEQ ID NO 12, SEQ ID NO 13, SEQ ID NO 14, or SEQ ID NO 15.